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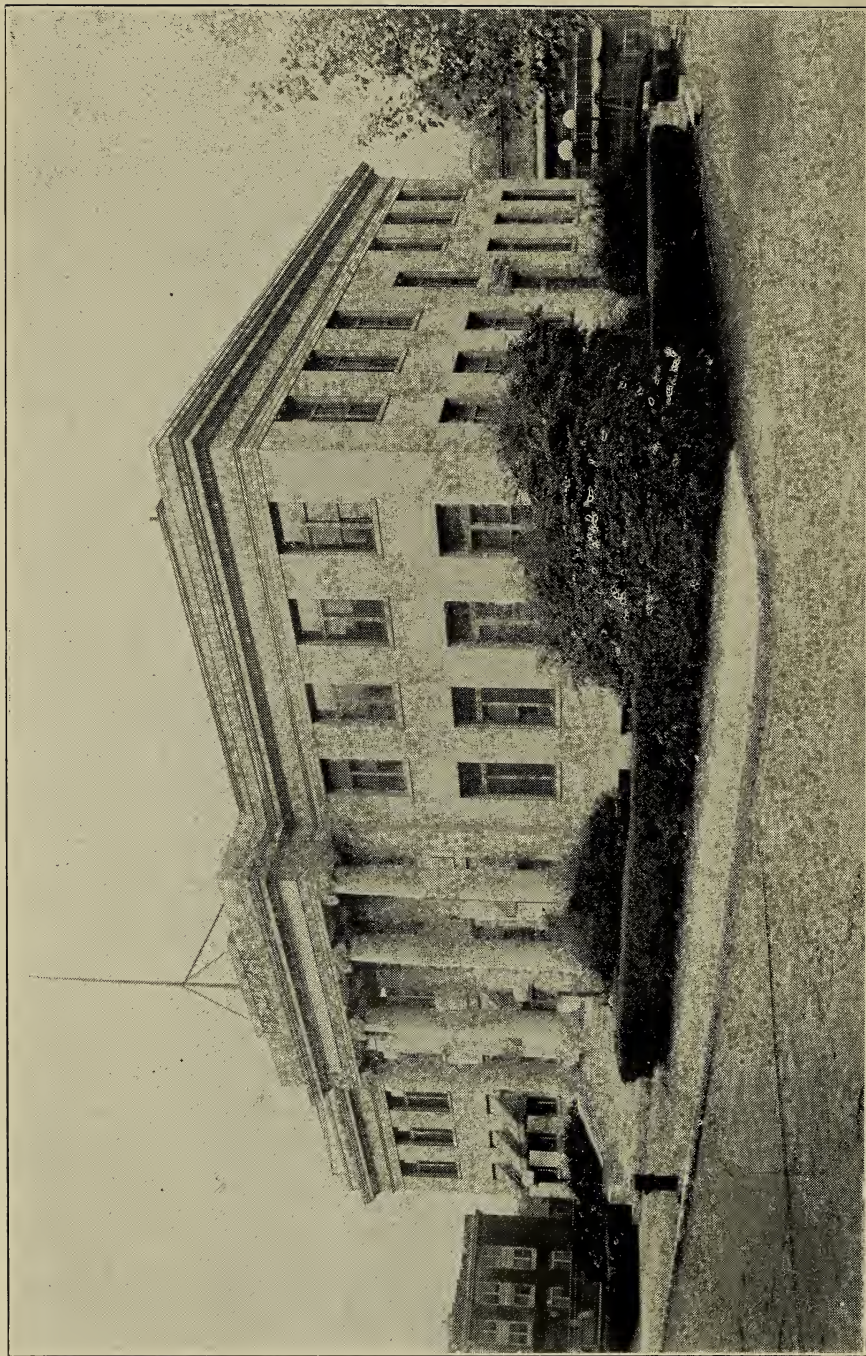
THE
HARVARD SCHOOL OF
PUBLIC HEALTH

55 VAN DYKE STREET, BOSTON, MASS.

1932-33



PUBLISHED BY HARVARD UNIVERSITY



HARVARD SCHOOL OF PUBLIC HEALTH

ANNOUNCEMENT
OF THE
HARVARD SCHOOL OF
PUBLIC HEALTH

55 VAN DYKE STREET, BOSTON, MASS.

OF
HARVARD UNIVERSITY

FOR

1932-33



PUBLISHED BY HARVARD UNIVERSITY

1932

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CALENDAR

1932

<i>Sept. 23, Friday.</i>	Registration of students.
<i>Sept. 26, Monday.</i>	ACADEMIC YEAR BEGINS. Payment of the first instalment of the tuition fee is required on this date.
<i>Oct. 12, Wednesday.</i>	Columbus Day: a holiday.
<i>Nov. 11, Friday.</i>	Armistice Day: a holiday.
<i>Nov. 24, Thursday.</i>	Thanksgiving Day: a holiday.
<i>Nov. 30, Wednesday.</i>	Payment of the second instalment of the tuition fee is required on or before this date.

RECESS FROM DEC. 23, 1932 TO JAN. 2, 1933, INCLUSIVE

1933

<i>Jan. 3, Tuesday.</i>	Last day for receiving theses for February degrees.
<i>Jan. 30, Monday.</i>	Payment of the third instalment of the tuition fee is required on or before this date.
<i>Jan. 30, Monday.</i>	SECOND HALF-YEAR BEGINS.
<i>Feb. 22, Wednesday.</i>	Washington's Birthday: a holiday.

RECESS FROM APRIL 2 TO APRIL 9, INCLUSIVE

<i>April 19, Wednesday.</i>	Patriots' Day: a holiday.
<i>April 29, Saturday.</i>	Payment of the fourth instalment of the tuition fee is required on or before this date.
<i>May 1, Monday.</i>	Last day for receiving theses for June degrees.
<i>May 30, Tuesday.</i>	Memorial Day: a holiday.
<i>June 22, Thursday.</i>	COMMENCEMENT.

SUMMER VACATION, FROM COMMENCEMENT TO SEPTEMBER 25, INCLUSIVE

In order to insure equal periods of time for the various courses, the following division of the academic year has been arbitrarily made:

<i>Mon. Sept. 26-Sat. Oct. 22</i>	OCTOBER
<i>Mon. Oct. 24-Sat. Nov. 19</i>	NOVEMBER
<i>Mon. Nov. 21-Thurs. Dec. 22</i>	DECEMBER ¹
<i>Tues. Jan. 3-Sat. Jan. 28</i>	JANUARY
<i>Mon. Jan. 30-Sat. Feb. 25</i>	FEBRUARY
<i>Mon. Feb. 27-Sat. Mar. 25</i>	MARCH
<i>Mon. Mar. 27-Sat. April 29</i>	APRIL ²
<i>Mon. May 1-Sat. May 27</i>	MAY

¹ Christmas vacation from Dec. 23, 1932, to Jan. 2, 1933, inclusive.

² Spring recess from April 2 to April 9, 1933, inclusive.

THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE

This Board is commonly known as the CORPORATION.

PRESIDENT

ABBOTT LAWRENCE LOWELL, A.B., LL.B., LL.D., Litt.D.,
L.H.D. 17 Quincy St., Cambridge

FELLOWS

THOMAS NELSON PERKINS, A.B., LL.B., LL.D.
50 Federal St., Boston

CHARLES PELHAM CURTIS, JR., A.B., LL.B.
47 Ames Building, Boston

JEREMIAH SMITH, JR., A.B., LL.B. 4 Berkeley St., Cambridge

ROGER IRVING LEE, A.B., M.D. 264 Beacon St., Boston

GRENVILLE CLARK, A.B., LL.B. 31 Nassau St., New York, N.Y.

TREASURER

HENRY LEE SHATTUCK, A.B., LL.B. 24 Milk St., Boston

DEPUTY TREASURER

JOHN WILBER LOWES, A.B. 24 Milk St., Boston

SECRETARY TO THE CORPORATION

FRANCIS WELLES HUNNEWELL, A.B., LL.B.
5 University Hall, Cambridge

THE BOARD OF OVERSEERS

The PRESIDENT and the TREASURER of the University, *ex officio*, and the following persons by election:—

1933*

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Woolworth Building, New York, N. Y.

JAMES HANDASYD PERKINS, A.B.

22 William St., New York, N. Y.

ROGER WOLCOTT, A.B., LL.B.

60 State St., Boston

EDWARD MALLINCKRODT, JR., A.M.

3600 North 2d St., St. Louis, Mo.

1934

HOMER GAGE, A.M., M.D., D.ENG.

8 Chestnut St., Worcester

JOSEPH LEE, A.M., LL.B., LL.D.

96 Mt. Vernon St., Boston

JESSE ISIDOR STRAUS, A.B.

1317 Broadway, New York, N. Y.

MARK SULLIVAN, A.B., LL.B., Litt.D.

1700 I St., Washington, D. C.

LEVERETT SALTONSTALL, A.B., LL.B.

608 Shawmut Bank Building, Boston

1935

CHARLES ALLERTON COOLIDGE, A.B., Art. D.

122 Ames Building, Boston

WILLIAM SYDNEY THAYER, A.B., M.D., LL.D., Hon. F.R.C.P.
(Ire.), S.D.

1208 Eutaw Place, Baltimore, Md.

HUGH CABOT, A.B., M.D., LL.D.

The Mayo Clinic, Rochester, Minn.

HENRY JAMES, A.B., LL.B.

36 W. 44th St., New York, N. Y.

WILLIAM TUDOR GARDINER, A.B., LL.D.

Gardiner, Me.

* The term expires, in each case, on Commencement Day of the year indicated.

1936

- CHARLES FRANCIS ADAMS, A.B., LL.B.
Navy Department, Washington, D. C.
- LEARNED HAND, A.M., LL.B., LL.D.
Old Post Office Building, New York, N. Y.
- SAMUEL SMITH DRURY, A.B., L.H.D., D.D., Litt.D.
St. Paul's School, Concord, N. H.
- WALTER SHERMAN GIFFORD, A.B., LL.D., S.D.
195 Broadway, New York, N. Y.
- ELIHU ROOT, JR., A.B., LL.B. 31 Nassau St., New York, N. Y.

1937

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14 Ashburton Pl., Boston
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- DWIGHT PARKER ROBINSON, A.B., S.B. St. Davids, Pa.
- FREDERICK WINSOR, A.B. Middlesex School, Concord, Mass.
- WILLIAM PHILLIPS, A.M., LL.D. 17 Commonwealth Ave., Boston

SECRETARY OF THE BOARD OF OVERSEERS

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50 Congress St., Boston

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- DAVID L. EDSALL, A.B., M.D., S.D., DEAN. 240 Longwood Ave., Boston
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Professor of Physiology and Assistant Dean.
- MILTON J. ROSENAU, M.D., A.M. Longwood Towers, Brookline
Charles Wilder Professor of Preventive Medicine and Hygiene.
- ALICE HAMILTON, M.D., A.M. 227 Beacon St., Boston
Assistant Professor of Industrial Medicine.
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Professor of Tropical Medicine.
- WALTER B. CANNON, A.M., M.D., S.D. 6 Frisbie Place, Cambridge
George Higginson Professor of Physiology.
- ERNEST E. TYZZER, A.M., M.D. 175 Water St., Wakefield
George Fabyan Professor of Comparative Pathology.
- C. MACFIE CAMPBELL, M.A., B.Sc., M.D. 58 Lake View Ave., Cambridge
Professor of Psychiatry.
- LAWRENCE J. HENDERSON, A.B., M.D. 4 Willard St., Cambridge
Professor of Biological Chemistry.
- EDWIN B. WILSON, Ph.D. 42 Brington R'd, Brookline
Professor of Vital Statistics.
- HANS ZINSSER, A.M., M.D., Sc.D. 52 Chestnut St., Boston
Professor of Bacteriology and Immunology.
- W. IRVING CLARK, A.B., M.D. 53 West St., Worcester
Assistant Professor of the Practice of Industrial Medicine.
- BENJAMIN WHITE, Ph.D. 3 Revere St., Jamaica Plain
*Assistant Professor of Bacteriology and of Preventive Medicine, and
Director of the Division of Biologic Laboratories, Department of
Public Health of Massachusetts.*
- GEORGE C. SHATTUCK, A.B., M.D., A.M. 520 Commonwealth Ave., Boston
Assistant Professor of Tropical Medicine.
- ANDREW WATSON SELLARDS, A.M., M.D. 240 Longwood Ave., Boston
Associate Professor of Tropical Medicine.
- RICHARD M. SMITH, A.B., M.D., Sc.D. 120 Marlborough St., Boston
Assistant Professor of Pediatrics and Child Hygiene.

† Arranged, with the exception of the President, Dean, and Assistant Dean, on the basis of collegiate seniority.

- WILSON G. SMILLIE, A.B., M.D., Dr.P.H. 29 Wamesit Road, Newton
Professor of Public Health Administration.
- MELVILLE C. WHIPPLE, 79 Larchwood Drive, Cambridge
Assistant Professor of Sanitary Chemistry.
- W. LLOYD AYCOCK, M.D. Brush Hill R'd, Hyde Park
Assistant Professor of Preventive Medicine and Hygiene.
- LOUIS AGASSIZ SHAW, A.B. 301 Berkeley St., Boston
Instructor in Physiology.
- HUGH KINGSLEY WARD, M.B., D.P.H., D.A. 45 Lincoln St., Lexington
Assistant Professor of Bacteriology and Immunology.
- J. HOWARD MUELLER, Ph.D. 2176 Centre St., West Roxbury
Silas Arnold Houghton Associate Professor of Bacteriology.
- JOSEPH BEQUAERT, Ph.D. 70 Hammond St., Cambridge
Assistant Professor of Entomology
- LLOYD D. FELTON, A.B., M.D., D.Sc. 50 School St., Belmont
Assistant Professor of Preventive Medicine and Hygiene.
- LAWRENCE T. FAIRHALL, Ph.D. 144 Dickerman R'd, Newton
Assistant Professor of Physiology.
- DAVID BRUCE DILL, Ph.D. 6 Oakland Ave., Arlington Heights
Assistant Professor of Biological Chemistry.
- HAROLD C. STUART, Litt.B., M.D. 116 Warren St., Brookline
Assistant Professor of Pediatrics and Child Hygiene.
- PHILIP DRINKER, S.B., Ch.E. 55 Van Dyke St., Boston
Associate Professor of Industrial Hygiene.
- CONSTANTIN P. YAGLOU, A.B., M.E., M.M.E. 55 Van Dyke St., Boston
Assistant Professor of Industrial Hygiene.
- GORDON M. FAIR, S.B. 18 Coolidge Hill R'd, Cambridge
Associate Professor of Sanitary Engineering.
- MARSHALL HERTIG, Ph.D. 240 Longwood Ave., Boston
Assistant Professor of Entomology.
- LEMUEL R. CLEVELAND, S.B., D.Sc. 12 Billings Lane, Jamaica Plain
Assistant Professor of Protozoölogy.
- DONALD L. AUGUSTINE, S.B., Sc.D. 138 Mason Terr., Brookline
Assistant Professor of Helminthology.
- CHARLES F. MCKHANN, M.A., M.D. 103 Longwood Ave., Boston
Assistant Professor of Pediatrics and Communicable Diseases.
- JACK H. SANDGROUND, S.B., S.M., Sc.D. 50 Jamaicaaway, Boston
Assistant Professor of Tropical Helminthology.
- CARL R. DOERING, A.B., M.D., D.Sc. 14 Coolidge Ave., Cambridge
Assistant Professor of Vital Statistics.
- THEODORE HATCH, S.B., S.M. 55 Van Dyke St., Boston
Instructor in Sanitary Engineering.
- JOHN F. ENDERS, Ph.D. 32 Guild R'd, Dedham
Instructor in Bacteriology.

OTHER INSTRUCTORS AND ASSISTANTS

- JOSEPH W. SCHERESCHEWSKY, A.B., M.D. 87 School St., Belmont
Associate in Preventive Medicine and Hygiene.
- JOSEPH B. HOWLAND, M.D. Peter Bent Brigham Hospital, Boston
Lecturer on Hospital Administration.
- FRANK E. SCHUBMEHL, M.D. 109 Broad St., Lynn
Assistant in Industrial Medicine.
- M. LUISE DIEZ, M.D. 37 River St., Boston
Instructor in Child Hygiene.
- ALEXANDER HAMILTON RICE, M.D., A.M. 901 Fifth Ave., New York, N.Y.
Lecturer on Diseases of South America.
- WILLIAM A. HINTON, S.B., M.D. Dedham St., Canton
Instructor in Bacteriology and Preventive Medicine, and Assistant Director of the Wassermann Laboratory.
- ROLAND CHATHAM CONNOR, M.D. 27 Groton St., Forest Hills, N. Y.
Lecturer on Tropical Medicine.
- FLORENCE L. MCKAY, A.B., M.D. 1 Waterhouse St., Cambridge
Instructor in Child Hygiene.
- HAROLD W. STEVENS, A.B., M.D. 71 Greaton R'd, West Roxbury
Assistant in Industrial Medicine.
- ROBERT S. QUINBY, M.D. 361 School St., Watertown
Instructor in the Practice of Industrial Medicine.
- ALBERT A. HORNOR, A.B., M.D. 125 Rockwood St., Brookline
Assistant in Tropical Medicine.
- ROBERT M. THOMSON, 40 Concord Ave., Milton
Assistant in Industrial Hygiene.
- FRANCIS B. GRINNELL, A.B., M.D. Charles River, Mass.
Associate in Bacteriology and Immunology.
- AFRANIO DO AMARAL, B.Sc., B.Litt., M.D., Dr.P.H. São Paulo, Brazil
Lecturer on Ophiology.
- LOUIS R. DANIELS, M.D. 30 Hillside Terr., Belmont
Instructor in the Practice of Industrial Medicine.
- NOEL G. MONROE, A.B., M.D. 88 Plymouth R'd, Newton
Assistant in Industrial Medicine.
- WILLIAM F. WELLS, S.B. 10 Chauncy St., Cambridge
Instructor in Sanitary Science.
- HENRY B. ELKIND, M.D., Dr. P.H. 15 Hurd R'd, Belmont
Assistant in Mental Hygiene.
- GEORGE HOYT BIGELOW, A.B., M.D., Dr. P.H. 231 Randolph Ave., Milton
Lecturer on Public Health Administration.
- HALSTEAD G. MURRAY, M.D. 81 Dennison Ave., Framingham
Assistant in Industrial Medicine.
- CHARLES F. HORAN 988 Memorial Drive, Cambridge
Assistant in Industrial Medicine.
- MAY R. MAYERS, A.M., M.D. 124 East 28th St., New York, N. Y.
Assistant in Industrial Medicine.

- RANDALL CLIFFORD, A.B., M.D. 215 Warren St., Brookline
Research Fellow in Physiology.
- SIDNEY D. KRAMER, M.D., Ph.D. 178 Walter St., Roslindale
Instructor in Preventive Medicine and Hygiene.
- BENJAMIN H. ADAMS, A.B., M.D. 86 Waban Pk., Newton
Research Fellow in Physiology.
- ELLIOTT S. A. ROBINSON, M.D., Ph.D. 5 Oakwood Terr., Newton Centre
Instructor in Bacteriology and Preventive Medicine, and Assistant Director of the Division of Biologic Laboratories, State Department of Public Health.
- MAXIMILIANO R. CASTANEDA, M.D. 240 Longwood Ave., Boston
Instructor in Bacteriology and Immunology.
- STANTON GARFIELD, M.D. 5 Monument St., Concord
Assistant in Pediatrics and Child Hygiene.
- FRED W. MORSE, Jr., B.S., M.D. 39 Pine Crest R'd, Newton
Instructor in Bacteriology.
- ABRAHAM S. SMALL, M.D. 8 Wright St., Cambridge
Instructor in Pediatrics and Child Hygiene.
- HARVEY SPENCER, B.A., M.D. 604 Walnut St., Newtonville
Assistant in Pediatrics and Child Hygiene
- STEWART H. CLIFFORD, M.D. 88 Perry St., Brookline
Assistant in Pediatrics and Child Hygiene.
- R. CANNON ELEY, M.D. 19 Myrtle St., Jamaica Plain
Assistant in Communicable Diseases and Pediatrics.
- RACHEL HARDWICK, B.S., M.D. 62 Spear St., Quincy
Assistant in Child Hygiene.
- CARLOS CHAGAS, A.M. Rio de Janeiro, Brazil
Lecturer on Tropical Medicine.
- GAYLORD WEST ANDERSON, A.B., M.D. 43 Dwhinda R'd, Newton
Assistant in Public Health Administration.
- HOWARD B. ANDERVONT, S.B., Sc.D. 43 Harrison St., Brookline
Instructor in Epidemiology.
- CHARLES W. SHILLING, A.B., M.D. 55 Van Dyke St., Boston
Research Fellow in Physiology.
- JOHN WILLIAM HEIM, M.S. 55 Van Dyke St., Boston
Research Fellow in Physiology.
- HANS THEILER, M.R.V.S. 7 Perkins Sq., Jamaica Plain
Instructor in Comparative Pathology.
- ELIOT F. PORTER, S.B., M.D. 9 Charles River Sq., Boston
Assistant in Bacteriology and Immunology.
- PSYCHE CATTELL, Ed.D. 2 Avon St., Cambridge
Research Assistant in Child Hygiene
- MAURICE B. STRAUSS, A.B., M.D. 25 Shaler Lane, Cambridge
Assistant in Tropical Medicine.
- MADELEINE E. FIELD, A.B., A.M. 368 Longwood Ave., Boston
Instructor in Physiology.
- HENRY WARREN Webster R'd, Weston
Assistant in Industrial Hygiene.

- WARREN PALMER DEARING, A.B., M.D. 10 Autumn St., Boston
Assistant in Epidemiology.
- CARL T. NELSON, D.M.D. 188 Longwood Ave., Boston
Assistant in Bacteriology.
- WILLIS GILPIN HAZARD, A.M. 35 Greenough Ave., Jamaica Plain
Instructor in Industrial Hygiene.
- FLORANCE W. HAYNES, M.A. 20 GORHAM R'd, West Medford
Research Fellow in Physiology.

ADMINISTRATIVE OFFICERS

- President:* ABBOTT LAWRENCE LOWELL, A.B., LL.B., LL.D., Litt.D., L.H.D.
 Office, 5 University Hall, Cambridge.
- Dean:* DAVID L. EDSALL, A.B., M.D., S.D.
 Office, School of Public Health, 55 Van Dyke St., Boston.
- Assistant Dean:* CECIL K. DRINKER, S.B., M.D.
 Office, School of Public Health, 55 Van Dyke Street, Boston.
- Secretary:* MARIAN DALE.
 Office, School of Public Health, 55 Van Dyke Street, Boston.

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- EDWIN B. WILSON, A.B., Ph.D., *Professor of Vital Statistics.*
- CECIL K. DRINKER, S.B., M.D., *Professor of Physiology.*
- WILSON G. SMILLIE, A.B., M.D., *Professor of Public Health Administration.*
- HUGH K. WARD, M.B., D.P.H., D.A.
Assistant Professor of Bacteriology and Immunology

OTHER COMMITTEES

- Visiting Committee of the School of Public Health appointed by the Overseers:* HUGH CABOT, *Chairman*, ELLIOTT C. CUTLER, FREDERIC C. HOOD, JAMES J. MINOT, ROBERT AMORY, W. IRVING CLARK, B. H. BRISTOW DRAPER, HORACE MORISON, FRANK J. HALE, GEORGE H. BIGELOW.
- Committee on Examinations:* EDWIN B. WILSON, *Chairman*, CECIL K. DRINKER, WILSON G. SMILLIE, GORDON M. FAIR, LEMUEL R. CLEVELAND.
- Fellowships:* EDWIN B. WILSON, CECIL K. DRINKER.
- Library:* REGINALD FITZ, *Chairman*, PHILIP DRINKER, CYRUS H. FISKE, EDWARD C. STREETER, ERNEST E. TYZZER, EDWIN B. WILSON, S. BURT WOLBACH, JAMES L. GAMBLE.

THE HARVARD SCHOOL OF PUBLIC HEALTH

HISTORICAL STATEMENT

THE HARVARD SCHOOL OF PUBLIC HEALTH first gave instruction to students in the academic year 1922-23. For many years activity in public health had been rapidly increasing in Harvard University. The influence of the University upon public health, through the pioneering and long-continued efforts of Dr. Henry P. Walcott, for many years senior member of the Harvard Corporation, was important and far-reaching. Courses in the various departments had been gradually developed to meet the need for men trained to conserve public health. The field of public health is so broad that it is not strange that this School did not find its origin in any one department. The records show certain important steps in what has been essentially a gradual development. In 1909 a department of Preventive Medicine and Hygiene was established in the Medical School. The degree of Doctor of Public Health was first conferred in 1911. In this same year a department of Sanitary Engineering was inaugurated in the Engineering School. In 1913 a department of Tropical Medicine was formed. In 1918 a Division of Industrial Hygiene with clinical and laboratory facilities was organized in the Harvard Medical School.

Besides these activities which were directly concerned with the training of men for public health work, research was being carried on in the regular departments of the Harvard Medical School in Bacteriology, Pathology, Parasitology, Physiology, Bio-Chemistry, and others, which had perhaps a less direct but very real bearing on the development of the science of public health. On analysis it appeared that there were many activities under the various faculties of Harvard University, besides those of Medicine and Engineering, that had some bearing on public health. Under the Faculty of Arts and Sciences there were many courses, such as those in Physics, Chemistry, Zoölogy, Social Ethics, etc., which formed in certain cases important parts of the training of individuals for work in public health. In addition, there had been established in 1914, under the Faculty of Arts and Sciences, a department of Hygiene, which undertook the supervision of the health of the students in its broadest aspect. This department had collected much data of considerable value in public health.

In 1913 the "Harvard-Technology" School of Public Health was organized. It was under the joint management of Harvard University and the Massachusetts Institute of Technology. This pioneer School continued to operate until the fall of 1922, when it was superseded by the new Harvard School of Public Health. However, the Massachusetts Institute of Technology continues to coöperate with the Harvard School of Public Health and also offers courses in public health through its department of Biology and Public Health, leading to the several degrees: bachelor, master, and doctor of science, doctor of philosophy, and to the certificate of public health.

As a result of these activities, the University found itself in possession of a substantial nucleus upon which to erect a new School of Public Health of larger scope, and in 1921 received from the Rockefeller Foundation a generous endowment for this purpose, known as the Henry P. Walcott Fund of Harvard University. This gift made it possible: first, to correlate and to enlarge the various departments already existing, such as Preventive Medicine and Hygiene, Bacteriology, Sanitary Engineering, Tropical Medicine, Parasitology, and Industrial Hygiene; second, to create a department of Vital Statistics and to develop new special fields of instruction, such as Public Health Administration, Child Hygiene, Mental Hygiene, Communicable Diseases, and Ventilation and Illumination; and lastly, to purchase a building standing on land adjacent to that occupied by the Medical School in which to house the administration and the various groups concerned with the work of public health.

GENERAL STATEMENT

PURPOSE

It is the object of the School of Public Health to provide the scientific groundwork of expert knowledge which underlies efficient health administration together with some personal acquaintance with modern public health practice of the best types and thus to prepare students for careers in public health. The School of Public Health offers courses and opportunities to fit students for administrative, teaching, field, or laboratory positions. To this end, lectures, laboratory work, hospital exercises, field surveys, and other forms of instruction are offered by members of the Faculty and by special instructors actively engaged in public health work. Coöperation is also maintained with federal, state, and local health departments, and with hospitals and other agencies. Opportunity is given to those who desire to contribute to knowledge through laboratory research or field investigation.

FACILITIES

Boston affords unusually good opportunities to study the operation and administration of state and municipal departments of health. Immediately adjacent to the School of Public Health is the Medical School of Harvard University with its well-equipped laboratories and other facilities. In connection with the Port of Boston, the Federal Government maintains maritime quarantine, immigration, medical and other health services. Abundant material for study of problems of mental hygiene may be found at the Psychopathic Hospital and at the Massachusetts Schools for Feeble-Minded at Waverley and Wrentham. In Boston are found the health problems of a metropolitan center, and within easy reach, those of large and small towns, as well as of country districts. Boston is an industrial center and its varied industries afford excellent opportunities for the study of industrial hygiene in all its phases. All the usual philanthropic health activities, such as baby hygiene stations, the Red Cross, anti-tuberculosis organizations, district and public health nursing services, and many other similar agencies are active in and around Boston. In certain cases, where students desire special field or laboratory work not offered in the regular courses, the School of Public Health can secure opportunities with the above health agencies and the various City, State, and private laboratories.

PROGRAMS OF STUDY

Public Health Education is founded upon a broad knowledge of three fields, Public Health Administration including Epidemiology, Vital Statistics, and Sanitary Engineering. All other subjects constitute specialties.

Students entering the School are divisible into two classes: (1) those coming for some highly specialized type of training and unconcerned with the matter of the certificate or a degree; and (2) those who wish to obtain a certificate or a degree.

Students wishing to become candidates for either the Master or Doctor of Public Health degrees may consider the courses Public Health Administration A, Epidemiology A, Vital Statistics A, and Sanitary Engineering A, as representing the minimum requirements in these subjects. Candidates for the two degrees mentioned are in no sense required to take these courses, but in the examination for the Master's degree and in the qualifying examination for the Doctor's degree, students will be examined upon these four fundamental subjects and upon such further subjects as may have been contained in their approved programs of study.

Sample programs of study meeting the requirements for the Master's degree and for candidacy for the Doctorate in Public Health are as follows:

1. Chief interest — Control of Communicable Diseases.

- Courses: 1. Public Health Administration and Epidemiology A
 2. Vital Statistics A.
 3. Sanitary Engineering A.
 4. Bacteriology.
 a. Bacteriology A.
 b. Applied Immunology 33*a.*
 c. Bacteriology 32.
 d. Bacteriology 31.
 5. Medical Zoölogy and Tropical Medicine A.
 6. Child Health A.

2. Chief interest — Industrial Hygiene.

- Courses: 1. Public Health Administration and Epidemiology A.
 2. Vital Statistics A.
 3. Sanitary Engineering A.
 4. Physiology A.
 5. Hygiene of Ventilation and Illumination A.
 6. Industrial Medicine.
 a. Industrial Medicine A.
 b. Industrial Toxicology A.
 c. Legal Aspects of Industrial Medicine.

3. Chief interest — Medical Zoölogy and Tropical Medicine.

- Courses: 1. Public Health Administration and Epidemiology A.
 2. Vital Statistics A.
 3. Sanitary Engineering A.
 4. Medical Zoölogy and Tropical Medicine A.
 5. Bacteriology A.
 6. Applied Immunology 33*a.*

4. Chief interest — Community Hygiene.

- Courses: 1. Public Health Administration and Epidemiology A.
 2. Vital Statistics A.
 3. Bacteriology A.
 4. Mental Hygiene A.
 5. Child Health A.
 6. Courses in Physiology, in Psychology, or in the Graduate School of Education, in accordance with individual needs.

Students deciding upon programs of study should realize that these divisions are merely convenient methods of concentrating their studies and in no sense indicate a rule of procedure in the School. In some instances election of courses without regard to the four fundamental subjects in public health and without regard to the divisions indicated above will be desirable. In such cases the final examination will cover the subjects elected.

OPPORTUNITIES FOR PART-TIME WORK

Students unable to spend a full academic year at the School may come for one or more months and secure courses in some special field, such as Child Health, Mental Hygiene, Physiology, Hygiene of Ventilation and Illumination, Industrial Medicine, Vital Statistics, Sanitary Engineering, Nutrition, Industrial Toxicology, Applied Immunology, and Bacteriology. A glance at the tabular view (page 54) will give an idea of the possibilities of this plan for certain courses. Students are thus able not only to take the intensive courses formally offered during the period that they are at the School, but to fit into their programs other training in special fields by individual arrangements with local laboratories, health agencies, and hospitals.

To full-time students in the School of Public Health all the facilities of the University are available and they should consult pp. 50-51 for opportunities that may be especially suited to their particular needs.

ADMISSION REQUIREMENTS

Candidates for the degrees must satisfy the Administrative Board of their academic fitness by a medical degree, or its equivalent, from an approved medical school. Candidates for the Certificate must present evidence of adequate training in English and other modern languages, physics, inorganic, organic and biochemistry, biology, anatomy, histology, physiology, pathology, and bacteriology. The latter represents the minimum requirements for entrance to the Harvard Medical School, plus certain of the fundamental medical sciences of the first two years of the Medical School.

The mere completion of courses is not ordinarily satisfactory evidence of the fitness of a prospective student. The Administrative Board may require further evidence of present ability to utilize the training received, and ability to profit by the courses administered by the School.

The medical degree, or its equivalent, is a prerequisite for the degree of Doctor of Public Health, and Master of Public Health, but not for the Doctor of Philosophy in Hygiene.

Those who do not meet the academic requirements for admission as candidates for degrees may be admitted as students to certain courses and programs of study at the discretion of the Administrative Board.

Opportunities are offered to research students who may desire to investigate special health problems or to make surveys without reference to a degree.

Admission of Women: Women whose previous training and experience are satisfactory may register in this School as special students. As in the past, women may also register for the degree of Doctor of Philosophy in Hygiene through Radcliffe College, taking their work in this School. The University does not confer the degrees of Doctor of Public Health, or Master of Public Health, on women; but they are eligible for the Certificate in Public Health.

A certificate of successful vaccination is required of all new students registering in any department of the University and this should be included with the application for admission.

All inquiries and communications should be addressed to the Secretary of the Harvard School of Public Health, 55 Van Dyke Street, Boston, Mass., who will forward upon request catalogues, admission blanks, fellowship applications, and any other information desired.

CERTIFICATE IN PUBLIC HEALTH

Prerequisites: The student must give evidence of having had satisfactory training in modern languages, inorganic, organic and biochemistry, biology, physiology, anatomy, histology, pathology, and bacteriology. As a rule these requirements will be met by students possessing a bachelor's degree plus the first two years in an approved medical school.

The Certificate in Public Health will be granted on satisfactory completion of individual courses in an approved program followed during one academic year in the School of Public Health, and does not require the final general examination essential for the degree of Master of Public Health.

DEGREES

Master of Public Health

Students entering for this degree must present satisfactory evidence of having received the M.D. degree, or its equivalent, from an approved medical school.

Candidacy for the degree of Master of Public Health: Before admission to candidacy for the degree of Master of Public Health, the student will

be required to present a program of advanced study covering one year's work.

Final Examination: The conditions governing this examination have been indicated in the section on programs for study. No student whose course record is unsatisfactory will be admitted to this examination without special permission from the Administrative Board.

Residence: For the degree of Master of Public Health, one academic year must be spent in residence at this University.

Doctor of Public Health

The degree of Doctor of Public Health is not obtained by the completion of a group of courses and submission of a thesis reporting routine observations. It is granted on evidence of real scholarship in the fundamental aspects of public health and presentation of a thesis which displays independent ability and originality in a special field. Two years of work at the School are usually necessary to obtain the Doctorate in Public Health. In instances where preparation has been exceptionally thorough a single year of residence may suffice, but no assurance can be given of this since the preparation of an adequate thesis may readily require more time than was anticipated.

Students contemplating entrance for this degree must present satisfactory evidence of having received the M.D. degree, or its equivalent, from an approved medical school.

Candidacy for the degree of Doctor of Public Health: To qualify as a candidate the student is required to pass an examination of the same type as that required to obtain the degree of Master of Public Health. This examination may be taken without reference to the length of residence as a student. It is intended to provide the assurance that all men receiving the Doctorate in Public Health are grounded in the four fundamental subjects and in the field most closely allied to their special interests. If the chief interest of the student is in the control of Communicable Diseases, or in Medical Zoölogy and Tropical Medicine, he must take or have had the equivalent of the courses grouped under Bacteriology and Medical Zoölogy and Tropical Medicine A. Programs of study or statements of the qualifications of the student for examination must be presented to the Administrative Board when the student enters the school.

Thesis: For the Doctorate in Public Health the student must present a program of independent investigation to the Administrative Board. The result of this investigation will form the basis of the thesis which must be presented as one of the final requirements for graduation. *Two copies* of the thesis must be received by the Chairman

of the Committee on or before the third day of January for degrees conferred in February, and on or before the first day of May, for degrees conferred in June. Each copy must be accompanied by a summary not exceeding 1200 words in length which shall indicate clearly its purposes, methods and results.

Examination: The final examination for the Doctor of Public Health degree, after acceptance of a thesis, will be oral. This examination, at which all major departments in the School will be represented, will be arranged by the Committee on Examinations.

Residence: For the degree of Doctor of Public Health, at least one academic year must be spent in residence at this University.

HIGHER DEGREES IN THE MEDICAL SCIENCES

Doctor of Philosophy (in Hygiene)

Properly qualified students in Public Health, who have no medical degree but who wish to secure a higher degree, may obtain a Doctor of Philosophy in the following special fields:

- Anatomy, including comparative anatomy.
- Embryology, including microscopic anatomy.
- Physiology or comparative physiology.
- Biological chemistry.
- Pathology or comparative pathology.
- Bacteriology.
- Pharmacology.
- Hygiene.

This degree is granted by the University to men, or through Radcliffe College to women, on recommendation of a Committee consisting of members of the Faculties of Public Health, of Medicine, and of Arts and Sciences.

Further information may be secured from the Secretary, Division of Medical Sciences, Harvard Medical School.

Doctor of Medical Sciences

The degree of Doctor of Medical Sciences is administered by the Faculty of Medicine in accordance with their regulations. Further information concerning this degree may be secured from the Secretary, Division of Medical Sciences, Harvard Medical School.

FEES AND EXPENSES

The fees are: For instruction (including laboratory charges except breakage, damage, and loss of apparatus), \$300 for each year.

Tuition will be charged on term bills in four instalments, as follows:

One-fourth on the term bill issued and payable September 26th, 1932.

One-fourth on the term bill issued November 12th and payable November 30th.

One-fourth on the term bill issued January 12th, 1933, and payable January 30th.

One-fourth on the term bill issued April 12th and payable April 29th.

Students desiring to take single courses may do so at the rate of \$50 for one full course, payable in advance.

Bills for miscellaneous charges will be rendered at the time the indebtedness is incurred.

All indebtedness to the University must be paid by candidates for degrees at least one day before Commencement.

Students who are candidates for degrees in the middle of the academic year must pay all dues to the University at least one day before the day upon which the degrees are to be voted.

A student who leaves during the year is charged to the end of the tuition period in which he leaves, provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the academic year or to the end of the tuition period in which such notice is given.

When a student's connection with the University is severed, all charges against him must be paid at once.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the Department in which the student is enrolled, after payment of all indebtedness and a reinstatement fee of \$10.

A student may rent a microscope from the School upon application to the Administration Office, but the School offers no guarantee that it will keep on hand a sufficient number of such instruments to furnish one for each student.

BOND REQUIRED OF STUDENTS

Every student is required to file with the Bursar on his entrance to the School a bond of \$500 executed by two sufficient bondsmen, one of whom must be a citizen of the United States, or by a surety company duly qualified to do business in Massachusetts. No officer or student of the University is accepted as a bondsman. Blank forms of bonds may be obtained at the Dean's Office or from the Bursar. *Students will be held responsible for the payment of fees until they have notified the Dean, in writing, of their intentions to withdraw from the School.*

MEDICAL ATTENDANCE

The School of Public Health provides a physician to students, who will give medical advice and treatment without charge during the school year. His office hours are 1 to 2 o'clock daily, except Saturdays, in Room 103, Building A, Harvard Medical School. In case of need he may be seen at other times by appointment.

Any illness necessitating absence from work must be reported to the Dean's Office either by the attending physician or by the student if he has not been to a doctor.

Under the auspices of the Department of Medicine of the Harvard Medical School each student will be required to undergo a physical examination shortly after admission to the School. Evidence of having been satisfactorily vaccinated is required for entrance to Harvard University. For information regarding the Stillman Infirmary see the University Catalogue.

FELLOWSHIPS

The School offers a limited number of fellowships of \$1200 each. These fellowships are open to students of high scholarship and exceptional ability. Applicants whose experience and training have fitted them to pursue an original piece of research work along lines of Public Health will be given preference. No fellowship will be granted to a student spending less than one academic year at the School.

Fellowship payments are made four times a year, on September 26th, November 12th, January 12th and April 12th. The full tuition, \$300, is deducted from the amount of the first payment.

Applications for fellowships should be filed with the Secretary of the School of Public Health.

LOCATION AND BUILDINGS

The School of Public Health is located at 55 Van Dyke Street, Boston. The building, formerly occupied by the Infants' Hospital, stands on land adjacent to that occupied by the Medical School and in close proximity to the Peter Bent Brigham Hospital, the Children's Hospital, the Collis P. Huntington Hospital, and the Lying-In Hospital. The Antitoxin and Vaccine Laboratory of the Massachusetts Department of Public Health is within a comparatively short distance of the School. The Boston Psychopathic Hospital is also within a few blocks. The students of Public Health have the privilege of the full use of the Harvard Medical School buildings.

LIBRARIES

The Library of the School of Public Health is combined with the central library of the Harvard Medical School. It is housed in the Administration Building of the Harvard Medical School adjacent to the School of Public Health, and is open in term time from 9 A.M. until 10 P.M. on week days, from 9 A.M. until 5 P.M. on Saturdays, and from 1 P.M. until 5 P.M. on Sundays. There are at present 54,504 volumes and 141,018 pamphlets in this library, and 634 current periodicals are kept on file.

Students also have the privilege of the use of the College Library in Cambridge, and of the various departmental libraries belonging to the University, in all of which there are 2,971,600 volumes and pamphlets.

Besides the University libraries, students in this School may use the Boston Public Library on Copley Square, and the Boston Medical Library at No. 8 the Fenway, which contains about 156,341 volumes and 102,522 pamphlets, and approximately 870 current periodicals. This very valuable library is open to those who desire to consult medical literature on week days from 9.30 A.M. until 10 P.M., and in July, August and September from 9.30 A.M. until 5 P.M.

HARVARD INFANTILE PARALYSIS COMMISSION

ROGER PIERCE, *Chairman*, RICHARD C. CURTIS, *Treasurer*, W. LLOYD AYCOCK, M.D., GEORGE H. BIGELOW, M.D., HERMANN F. CLARKE, HOMER GAGE, M.D., ARTHUR T. LEGG, M.D., JAMES J. MINOT, M.D., ROBERT B. OSGOOD, M.D., W. RODMAN PEABODY, REDFIELD PROCTOR, MILTON J. ROSENAU, M.D., RICHARD M. SMITH, M.D., CHARLES H. TAYLOR, HANS ZINSSER, M.D., FREDERICK AYER.

A Commission for the study of infantile paralysis was appointed by the Corporation of Harvard University on September 25, 1916.

Since that time the Commission has conducted clinics for the treatment of the paralytic effects of this disease and for early diagnosis and treatment of its acute stage. In this work the Commission coöperates with the Massachusetts State Department of Health and the Vermont Department of Health. In addition it is conducting a comprehensive study of the cause, mode of spread and prevention of infantile paralysis. This work is carried on at the bedside, in the field and in the laboratory.

The work of the Commission is financed by public subscription. Its research work is also aided by a gift from the International Committee for the Study of Infantile Paralysis and a fund donated to the Vermont Department of Public Health.

ANNOUNCEMENT OF COURSES

BACTERIOLOGY

HANS ZINSSER, A.M., M.D., Sc.D., *Professor of Bacteriology and Immunology.*

J. HOWARD MUELLER, Ph.D., *Silas Arnold Houghton Associate Professor of Bacteriology and Immunology.*

BENJAMIN WHITE, Ph.D., *Assistant Professor of Bacteriology and Director of the Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

HUGH KINGSLEY WARD, M.B., D.P.H., D.A., *Assistant Professor of Bacteriology and Immunology.*

JOHN F. ENDERS, Ph.D., *Instructor in Bacteriology.*

FRANCIS B. GRINNELL, A.B., M.D., *Associate in Bacteriology and Immunology.*

WILLIAM A. HINTON, S.B., M.D., *Instructor in Bacteriology and Assistant Director of Wassermann Laboratory.*

MAXIMILIANO R. CASTANEDA, M.D., *Instructor in Bacteriology and Immunology.*

ELLIOTT S. A. ROBINSON, M.D., Ph.D., *Instructor in Bacteriology and Assistant Director of the Biologic Laboratories, State Department of Public Health.*

FRED W. MORSE, Jr., M.D., *Instructor in Bacteriology.*

ELIOT F. PORTER, S.B., M.D., *Assistant in Bacteriology and Immunology.*

CARL T. NELSON, D.M.D., *Assistant in Bacteriology.*

The Department of Bacteriology and Immunology of the Harvard School of Public Health, in addition to a course in bacteriology adapted to the needs of medical students, offers a course of lectures and demonstrations in immunity and specific therapy. A course is given once a year for a limited number of advanced students, with particular reference to the needs of public health officers. The work is adapted in each case to the needs of the student applying, by special arrangements with the instructing staff.

Opportunity for diagnostic serological work is offered in the Department in connection with the Wassermann Laboratory of the State of Massachusetts, and provision is made for individual work upon problems of serum production, standardization, etc., under Dr. Benjamin White of the Massachusetts Antitoxin and Vaccine Laboratory.

Advanced work and opportunities for investigation are available, admission to this type of work depending upon the fitness of the applicant.

Bacteriology A

Three afternoons a week (Monday, Wednesday, and Friday) for four months (September 26–January 27), 2–5 P.M.

The regular medical students' course, which deals with the bacteriology of the pathogenic microorganisms in its specific applications to the diagnosis, investigation and prevention of communicable disease, and covers the practical diagnosis methods most frequently employed in the hospital and in the field. While Public Health students follow the general plan of the medical course, they are segregated under the guidance of Professor Ward and are given a training more definitely adapted to the needs of public health bacteriologists wherever this is indicated. In addition to the regular sessions of the medical course, Dr. Ward will meet the public health students taking this work from 3 to 5 P.M. on Tuesdays and Thursdays throughout December, for special training in problems of public health bacteriology which cannot be covered in the regular Bacteriology A course. Exceptional students who have had recent and satisfactory training in general bacteriology may be admitted to these special sessions without taking the course as a whole.

Applied Immunology 33a

Two afternoons a week (Tuesday and Thursday) for one month (March 28–April 27), 2–5 P.M.

This course, which will be given by Professor White and Dr. Robinson at the State Antitoxin and Vaccine Laboratory, will deal with the methods used in the preparation and testing of serums and vaccines, with a critical discussion of the rationale of the preparation and use of these biologic products.

Bacteriology 32

Two afternoons a week (Tuesday and Thursday) for three months (November through January), 2–3 P.M.

Immunity. — A course of lectures on the principles and theories of immunity, with practical demonstrations and discussions in which a number of lectures preparatory to the work in the Antitoxin Laboratory will be given by Dr. White and Dr. Robinson.

Bacteriology 31

Arrangements as to hours will be made to suit the needs of individual students.

Diagnostic Serum Reactions. — A short course given by Dr. Hinton which deals chiefly with the details of methods of serological syphilis diagnosis, but includes other phases of practical diagnostic public health laboratory work and the organization of laboratories for such purposes.

Since the above series of courses constitutes a complete unit of bacteriological public health laboratory work, it is proposed for students who take the entire group of courses to treat them as a single course in regard to examination.

If this curriculum of bacteriological courses is taken on the foundation of a preliminary course in epidemiology, vital statistics and sanitary engineering and is combined with medical zoölogy, this would represent a thorough training in that branch of public health which deals with the communicable diseases.

Research in Bacteriology

Special advanced courses will be offered in Immunology and the Technique of Serum Study, and will be open to a limited number of students.

Opportunity will also be given for properly qualified students to pursue research work along varied lines.

APPLIED IMMUNOLOGY — SERUMS AND VACCINES

BENJAMIN WHITE, Ph.D., *Director of the Division of Biologic Laboratories, Massachusetts Department of Public Health.*

ELLIOTT S. A. ROBINSON, M.D., Ph.D., *Assistant Director of the Division of Biologic Laboratories, Massachusetts Department of Public Health.*

Applied Immunology 33a

Two afternoons a week (Tuesday and Thursday) for one month (March 28–April 27), 2–5 P.M.

This course, which will be given at the State Antitoxin and Vaccine Laboratory, will deal with the methods used in the preparation and testing of serums and vaccines, with a critical discussion of the rationale of the preparation and use of these biologic products.

In addition to the courses given jointly by the Massachusetts Antitoxin and Vaccine Laboratory and the Department of Bacteriology

(for details see Bacteriology), opportunities will be afforded to properly qualified students who desire special instruction in the production of biologic products to study and participate in the preparation and testing of serums and vaccines.

Facilities are also offered to candidates for the higher degrees to carry on original work in immunology.

COMPARATIVE PATHOLOGY

ERNEST E. TYZZER, A.M., M.D., *Professor of Comparative Pathology.*

MARSHALL HERTIG, Ph.D., *Assistant Professor of Entomology.*

DONALD L. AUGUSTINE, S.B., Sc.D., *Assistant Professor of Helminthology.*

HANS THEILER, M.R.V.S., *Instructor in Protozoölogy.*

Parasitology A

Three mornings a week (Monday, Wednesday, and Friday) for one month (January), 10 A.M.-12.30 P.M.

This is the regular Medical School course and is open to students in the School of Public Health.

Medical Zoölogy and Tropical Medicine A

Three afternoons a week (Monday, Wednesday, and Friday) for four months (January 30-May 26), 2-5 P.M.

Instruction in this course will be furnished by the combined staffs of the Departments of Comparative Pathology and Tropical Medicine. Clinical, epidemiological, and pathological aspects of the subjects under consideration will be presented at appropriate times in connection with the laboratory studies. While the course as outlined is divided into four sections, the instruction will be so correlated as to present the subject matter as a single unit.

1—Medical Entomology

Three afternoons a week (Monday, Wednesday, and Friday) for one month (January 30-February 24), 2-5 P.M.

The instruction in this subject presupposes an elementary knowledge of insects. It will include a survey of the more important arthropods concerned in the health of man, both in temperate and tropical regions. Emphasis is placed upon those arthropods which act as disease transmitters, with a study of life histories, habits, and methods of control.

Opportunities are offered for becoming acquainted with methods of collecting, identifying, dissecting and preparing material, and the rearing of insects in experimental studies. A study will be made of the various ways in which these organisms are active either as parasites, as carriers of diseases, or as the cause of local injuries or physiological disturbances. Laboratory work will provide practical training in identification, dissection, methods of studying life histories and habits, and experimental transmission of diseases. Stress will be laid upon furnishing the student with the most useful monographs and reference books. Students may go on further to become acquainted with the extensive special literature so as to be able to carry on independent research work in tropical and foreign countries.

2 — Protozoölogy

Three afternoons a week (Monday, Wednesday, and Friday) for one month (February 27–March 24), 2–5 P.M.

Following a brief preliminary survey of the field of Medical Zoölogy, such Protozoa as are considered of medical importance will be taken up with special reference to their identification and life cycles. Together with the theoretical knowledge of the subject acquired through reading or from lectures, the student will be expected to learn certain useful methods for obtaining and preparing material for study and also to become proficient in the identification of the more important parasitic protozoa. Material from human cases, cultures and experimentally infected animals will be utilized for the study of these microörganisms. Seminars will be held at which the student will review certain important contributions to the subject.

3 — Helminthology

Three afternoons a week (Monday, Wednesday, and Friday) for one month (March 27–April 28), 2–5 P.M.

During this period the course is designed to give the student a general knowledge of the biology of the helminths, and to acquaint him with those species parasitic in man and the diseases caused by them. Emphasis will be placed upon the symptomatology, methods of diagnosis and treatment; and the life cycles in relation to the transmission, prophylaxis and control of these parasites. Conferences will be held at which reports are to be given by members of the class on original observations and current literature pertaining to the subject.

4—Infectious Diseases

Three afternoons a week (Monday, Wednesday, and Friday) for one month (May 1-26), 2-5 P.M.

The course during this month consists of lectures, laboratory work, and clinical instruction.

The most important infectious and other preventable diseases of tropical and foreign countries will be dealt with from the following points of view:

1. The etiology, principles, and modern methods of diagnosis.
2. The methods of transmission and mode of spread.
3. The hygienic problems involved in their control and prevention.
4. The administrative and practical measures to be employed in the control of these diseases under endemic and epidemic conditions.
5. The value of a knowledge of the methods of diagnosis, methods of transmission, prevention, and treatment of the tropical diseases of men and animals in connection with the study, prevention, and treatment of the human infectious diseases in general.

Advanced Work in Medical Zoölogy

Advanced courses and research are offered in Protozoölogy, Helminthology, and Medical Entomology, by special arrangement with members of the staff.

COMMUNICABLE DISEASES

CHARLES F. MCKHANN, M.A., M.D., *Assistant Professor of Pediatrics and Communicable Diseases.*

R. CANNON ELEY, M.D., *Assistant in Communicable Diseases and Pediatrics.*

Communicable Diseases A

Two mornings a week (Tuesday and Saturday) 10-11 A.M., for one month (January 30-February 25).

Bacteriology A and Epidemiology A are prerequisites for this course, which consists of lectures, demonstrations, and conferences on the care and management of patients with communicable diseases, with special consideration of problems which are solved jointly by the public health official and the practicing physician.

Communicable Diseases B

Three mornings a week (Tuesday, Thursday, and Saturday) 9-11 A.M., during March or April. Limited to two students per month.

This course consists of a service as observer and clerk in the Isolation Division of the Out-Patient Department and on the Isolation Wards of the Children's Hospital. It is intended to familiarize the public health student with the diagnostic and therapeutic phases of the care of the individual patient and the determination of the proper and practical disposition of patients suffering from communicable diseases.

Communicable Diseases C

The course in communicable diseases offered to third year medical students (Wednesday afternoons during the second half-year, 2-4 P.M.) is open to students enrolled in the School of Public Health, after consultation with the professor in charge.

Research in Communicable Diseases

Opportunity is offered to qualified students to pursue research work in communicable disease problems in the Department of Communicable Diseases or in conjunction with the Department of Bacteriology and Immunology.

TROPICAL MEDICINE

RICHARD P. STRONG, Ph.B., M.D., S.D., *Professor of Tropical Medicine.*

ANDREW WATSON SELLARDS, A.M., M.D., *Associate Professor of Tropical Medicine.*

GEORGE C. SHATTUCK, M.D., A.M., *Assistant Professor of Tropical Medicine.*

JOSEPH BEQUAERT, Ph.D., *Assistant Professor of Entomology.*

LEMUEL R. CLEVELAND, B.S., D.Sc., *Assistant Professor of Protozoölogy.*

JACK H. SANDGROUND, S.D., *Assistant Professor of Tropical Helminthology.*

ALEXANDER HAMILTON RICE, M.D., A.M., *Professor of Geographical Exploration and Lecturer on Diseases of South America.*

ROLAND C. CONNOR, M.D., *Lecturer on Tropical Medicine.*

CARLOS CHAGAS, A.M., *Lecturer on Tropical Medicine.*

AFRANIO DO AMARAL, B.Sc., B.Litt., M.D., Dr.P.H., *Lecturer on Ophiology.*

ALBERT A. HORNOR, A.B., M.D., *Assistant in Tropical Medicine.*

MAURICE B. STRAUSS, A.B., M.D., *Assistant in Tropical Medicine.*

Medical Zoölogy and Tropical Medicine A

Three afternoons a week (Monday, Wednesday, and Friday) for four months (January 30–May 26), 2–5 P.M.

Instruction in this course will be furnished by the combined staffs of the Department of Comparative Pathology and Tropical Medicine. Clinical, epidemiological, and pathological aspects of the subjects under consideration will be presented at appropriate times in connection with the laboratory studies.

1 — Medical Entomology

Three afternoons a week (Monday, Wednesday, and Friday) for one month (January 30–February 24), 2–5 P.M.

This course presupposes an elementary knowledge of insects. It will include a survey of the more important arthropods concerned in the health of man, both in temperate and tropical regions. Emphasis is placed upon those arthropods which act as disease transmitters, with a study of life histories, habits, and methods of control. Opportunities are offered for becoming acquainted with methods of collecting, identifying, dissecting and preparing material, and the rearing of insects in experimental studies. A study will be made of the various ways in which these organisms are active either as parasites, as carriers of diseases, or as the cause of local injuries or physiological disturbances. Laboratory work will provide practical training in identification, dissection, methods of studying life histories and habits, and experimental transmission of diseases. Stress will be laid upon furnishing the student with the most useful monographs and reference books. Students may go on further to become acquainted with the extensive special literature so as to be able to carry on independent research work in tropical and foreign countries.

2 — Protozoölogy

Three afternoons a week (Monday, Wednesday, and Friday) for one month (February 27–March 24), 2–5 P.M.

Following a brief preliminary survey of the field of Medical Zoölogy, such Protozoa as are considered of medical importance will be taken up with special reference to their identification and life cycles. Together with the theoretical knowledge of the subject acquired through

reading or from lectures, the student will be expected to learn certain useful methods for obtaining and preparing material for study and also to become proficient in the identification of the more important parasitic protozoa. Material from human cases, cultures and experimentally infected animals will be utilized for the study of these microorganisms. Seminars will be held at which the student will review certain important contributions to the subject.

3 — Helminthology

Three afternoons a week (Monday, Wednesday, and Friday) for one month (March 27–April 28), 2–5 P.M.

During this period the course is designed to give the student a general knowledge of the biology of the helminths, and to acquaint him with those species parasitic in man and the diseases caused by them. Emphasis will be placed upon the symptomatology, methods of diagnosis and treatment; and the life cycles in relation to the transmission, prophylaxis and control of these parasites. Conferences will be held at which reports are to be given by members of the class on original observations and current literature pertaining to the subject.

4 — Infectious Diseases

Three afternoons a week (Monday, Wednesday, and Friday) for one month (May 1–26), 2–5 P.M.

The course during this month consists of lectures, laboratory work, and clinical instruction.

The most important infectious and other preventable diseases of tropical and foreign countries will be dealt with from the following points of view:

1. The etiology, principles, and modern methods of diagnosis.
2. The methods of transmission and mode of spread.
3. The hygienic problems involved in their control and prevention.
4. The administrative and practical measures to be employed in the control of these diseases under endemic and epidemic conditions.
5. The value of a knowledge of the methods of diagnosis, methods of transmission, prevention, and treatment of the tropical diseases of men and animals in connection with the study, prevention, and treatment of the human infectious diseases in general.

Advanced Work in Tropical and Exotic Diseases

For students entering the School with the intention of specializing in public health in tropical countries, a series of courses lasting eight months is provided. The program followed must include advanced courses in exotic and tropical diseases in:

1. Practical bacteriology and pathology.
2. Practical protozoölogy and helminthology.
3. Practical entomology.
4. Epidemiology (including field work).
5. Clinical, at infectious diseases hospital.

The courses in bacteriology, protozoölogy, helminthology, and entomology are fundamental in connection with the prevention and control of tropical or exotic diseases. Courses relating to tropical climatology, botany, venomous animals and the biological effects of sunlight in tropical countries will also be of advantage and of particular interest to the health officer who desires a more cosmopolitan experience, and such are provided for those students desiring them. The need for thoroughly trained men in the field of exotic and tropical medicine is especially urgent.

The program for such advanced students will naturally vary in individual cases and must be approved by the Professor of Tropical Medicine before submission to the Administrative Board.

Special Clinical Work: There are opportunities from time to time for one or more students to attend clinical work for longer or shorter periods at the Boston City Hospital, where there is a service for tropical and foreign diseases under Dr. George C. Shattuck of the Department. There are also opportunities for special clinical work in several hospitals or in the different laboratories situated in the tropics with which Harvard University is connected.

Research in Tropical and Foreign Medicine

The research work in progress includes studies on the etiology and prevention of yellow fever; the symbiosis between *Cryptocercus* and its protozoa; cytology of hypermastigotes; role of the centrosome in mitosis; causes of encystation, cellulose digestion in protozoa; studies on onchocerciasis and its prevention in Guatemala; entomological studies of the parasitic and blood-sucking insects of Guatemala in relation to onchocerciasis; studies in variation in morphology of parasitic nematodes; taxonomic revision of the genus *Onchocerca*; systematic studies on parasites from Indo-China; medical surveys and the etiology of certain affections in Yucatan.

PREVENTIVE MEDICINE AND EPIDEMIOLOGY

MILTON J. ROSENAU, M.D., A.M., *Charles Wilder Professor of Preventive Medicine and Hygiene.*

LLOYD D. FELTON, A.B., M.D., D.Sc., *Assistant Professor of Preventive Medicine and Hygiene.*

BENJAMIN WHITE, Ph.D., *Assistant Professor of Preventive Medicine and Hygiene, and Director of the Antitoxin and Vaccine Laboratory, State Department of Public Health.*

W. LLOYD AYCOCK, M.D., *Assistant Professor of Preventive Medicine and Hygiene.*

JOSEPH W. SCHERESCHEWSKY, A.B., M.D., *Associate in Preventive Medicine and Hygiene.*

WILLIAM A. HINTON, B.S., M.D., *Instructor in Preventive Medicine and Hygiene.*

ELLIOTT S. A. ROBINSON, M.D., Ph.D., *Instructor in Preventive Medicine and Hygiene, and Assistant Director of the Antitoxin and Vaccine Laboratory, State Department of Public Health.*

HOWARD B. ANDERVONT, B.S., Sc.D., *Instructor in Epidemiology.*

SIDNEY D. KRAMER, M.D., Ph.D., *Instructor in Preventive Medicine and Hygiene.*

WARREN PALMER DEARING, A.B., M.D., *Instructor in Epidemiology.*

Epidemiology A

Three mornings a week (Monday, Tuesday, and Wednesday) for four months (September 26–January 25), 11.30 A.M.–12.30 P.M.

Field work — All day Thursday during October and January. Thursday mornings during November and December.

The course consists of lectures, demonstrations, and practical field work. The lectures are designed to give the principles, historic development, and methods of epidemiology, with their application to public health administration of the communicable diseases. A number of well-studied epidemics are described and discussed with special reference to their origin, mode of spread and control. The course also includes a consideration of the following subjects: the epidemiology of air-borne, water-borne, milk-borne, and insect-borne infections; the epidemiology of selected representative diseases; disinfection and disinfectants;

seasonal prevalence and periodicity; geographic distribution; the laws of epidemics. Each student is required to study and report briefly upon an epidemic and to make a special study of some topic in epidemiology, which is made the subject of a report and discussion at one of the conferences. The field work is done in coöperation with the Department of Public Health Administration and the Massachusetts State Department of Public Health. Each student is assigned to a member of the Department who acts as a tutor, supervises his reading, guides his field work and surveys, and helps generally with his problems. The system permits the development of individual interests. Students taking the course are also invited to attend a Journal Club which meets regularly during the academic season.

Epidemiology B

Advanced work. By arrangement with Professor Rosenau.

This consists in special investigations of a particular disease or problem from both the field and the laboratory standpoints.

Research in Preventive Medicine and Epidemiology

During the past year research has been carried on in the following subjects: pneumonia (Felton), cancer (Schereschewsky), infantile paralysis (Aycock), filterable viruses (Andervont), vaccinia (Rosenau). Properly qualified students desiring to do advanced work will be welcomed into any of the lines of research which have been reviewed.

PUBLIC HEALTH ADMINISTRATION

WILSON G. SMILLIE, A.B., M.D., Dr.P.H., *Professor of Public Health Administration.*

GEORGE H. BIGELOW, A.B., M.D., Dr. P.H., *Lecturer on Public Health Administration and Commissioner, Department of Public Health of Massachusetts.*

WILLIAM F. WELLS, S.B., *Instructor in Sanitary Science.*

GAYLORD W. ANDERSON, A.B., M.D., *Assistant in Public Health Administration and Deputy Commissioner, Department of Public Health of Massachusetts.*

Special lectures in this course during the year 1931-32 were given by the following:

DR. LEON HAVENS, *Director of Laboratories, Alabama State Health Department.*

DR. E. S. GODFREY, *Director of Rural Health Work, New York State Health Department.*

MISS SOPHIE C. NELSON, *Director of Visiting Nurse Service, John Hancock Mutual Life Insurance Company, Boston.*

DR. C. L. SCAMMAN, *Director of Division of Public Health, Commonwealth Fund, New York.*

DR. THOMAS PARRAN, JR., *Commissioner of Health, New York State.*

DR. JAMES P. LEAKE, *United States Public Health Service, Washington, D. C.*

DR. VICTOR G. HEISER, *Director for the Far East, International Health Division, Rockefeller Foundation.*

Public Health Administration A

Three mornings a week (Monday, Wednesday, and Friday) for four months (September 26-January 27), 10.15-11.15 A.M.

Field work — All day Thursday during October and January, Thursday mornings during November and December.

Lectures: The theory of public health administration is developed by a study of the administrative methods actually employed in various governmental units, including municipalities, counties, states, and the federal government, with comparative studies of public health administration in various foreign countries. The lectures are given by the Professor of Public Health Administration and by the State Health Commissioner of Massachusetts and his staff. Certain phases of public health administration are covered by special lecturers who are invited from time to time to cover those particular fields upon which they can speak with authority.

Each student compiles his own textbook during the course, using a loose-leaf system. The notes on the lectures are supplemented by pamphlets, reprints, forms, and references to specific phases of the work, and the current literature is abstracted, so that at the end of the course the student has a nucleus for a public health reference library which can be enlarged from year to year.

Conferences: Each student is allowed to choose some specific governmental unit and develop a suitable and complete plan of public health administration for this unit. In doing this he should coördinate his training in vital statistics, bacteriology, child hygiene, and epidemiology, applying this knowledge in the organization of a theoretical department, making suitable budgets for each division, determining the number of personnel, and outlining the activities of the various bureaus.

These outlines will be discussed by the students in general conference, one student presenting his theoretical organization and leading the discussion, the other students making constructive criticisms and suggestions.

Field Studies and Demonstrations: These are arranged for Thursday from October through January and are given in coöperation with the Departments of Epidemiology and of Child Hygiene. The exercises are selected to illustrate the practical application of the data that have been presented in the lectures. Active coöperation has been effected with the Health Department of the City of Boston, the Massachusetts State Department of Public Health and the Connecticut State Department of Health; also with the City Department of Health, Providence, R. I.; the City of Brookline, and many other official and unofficial health agencies.

A wide variety of special fields in public health administration is available for observation and study by the students, including special activities in large and small city health departments, rural boards of health, departments of school medical inspection, public health nursing, communicable disease control, health units, clinics for the control of tuberculosis and venereal disease, health examinations, contagious disease hospitals, etc.

GRAPHIC METHODS

Two afternoons a week (Tuesday and Thursday) for two months (March 28-May 25), 2-5 P.M.

This is a voluntary course and is designed to fill the rapidly growing need for rational treatment of graphic methods of recording, analyzing, and presenting data. Graphic elements are developed into a method of visual representation of public health concepts. Useful mathematical relationships are solved by simple graphical methods in the analysis of data and an effective medium provided for emphasizing significant facts. The simple treatment of relationship, graphic geometry, arithmetic, algebra, and calculus, forms a basis for applied graphics, plans and drawings, maps and sketch mapping, charts and models. Practical exercises in graphic technique, lettering, light and shade, form and color, serve to enhance the usefulness of graphic devices found in various other courses and to develop an attitude of constructive criticism in the art of visual education.

Research in Public Health Administration

Advanced students are offered the opportunity to undertake special studies in Public Health Administration. The student must have completed Public Health Administration A, Epidemiology A, and Vital Statistics A before registering for this work.

CHILD HYGIENE

RICHARD M. SMITH, A.B., M.D., ScD., *Assistant Professor of Pediatrics and Child Hygiene.*

HAROLD C. STUART, Litt.B., M.D., *Assistant Professor of Pediatrics and Child Hygiene.*

M. LUISE DIEZ, M.D., *Instructor in Child Hygiene.*

FLORENCE L. MCKAY, A.B., M.D., *Instructor in Child Hygiene.*

ABRAHAM S. SMALL, M.D., *Instructor in Pediatrics and Child Hygiene.*

STANTON GARFIELD, A.B., M.D., *Assistant in Pediatrics and Child Hygiene.*

HARVEY SPENCER, A.B., M.D., *Assistant in Pediatrics and Child Hygiene.*

STEWART H. CLIFFORD, M.D., *Assistant in Pediatrics and Child Hygiene.*

RACHEL HARDWICK, B.S., M.D., *Assistant in Child Hygiene.*

PSYCHE CATTELL, Ed.D., *Research Fellow in Child Hygiene.*

JOSEPHINE G. O'BRIEN, R.N.

With the coöperation of special lecturers.

Child Health A

Lectures: *three mornings a week (Monday, Wednesday, and Friday) for four months (September 26-January 27), 9-10 A.M.*

Field Work: *All day Thursday during October and January, Thursday mornings during November and December, in conjunction with Public Health Administration A and Epidemiology A.*

This course presents in broad outline various subjects which have an important relation to child health. They are grouped under three general divisions.

1. — Growth and Development

The lectures on Growth and Development consider not only normal occurrences, but the requirements for satisfactory progress, and the problems of health appraisal in childhood. An attempt is made in this division to cover the scientific foundations upon which activities in the field of child health should be constructed.

2. — Morbidity and Mortality

Lectures on Morbidity and Mortality focus attention upon the chief conditions requiring preventive effort and the prevalence of various risks and handicaps.

3. — Child Hygiene

This division deals with the methods and channels of both public and private applied child health activities. Field exercises, as well as lectures, demonstrate activities in child hygiene.

Through the field exercises an opportunity is offered to study at first hand the work of the Division of Child Hygiene of the State Department of Public Health, the Infant and Pre-School Child Welfare Conferences of the Boston City Health Department, and the health programs of several schools in the vicinity. The care and protection of handicapped children is also demonstrated on visits to such institutions as the Florence Crittendon Home, the Home for Little Wanderers, the State Hospital School at Canton, the Judge Baker Foundation, and the Perkins Institute at Watertown.

During the year 1931-32 special lectures and instruction were given by the following:

Gaylord Anderson, M.D.	Raymond Kinmouth, M.D.
Francis P. Denny, M.D.	John Kuhns, M.D.
Robert L. DeNormandie, M.D.	Carl MacCorison, M.D.
Mr. Philip Drinker	Miss Cornelia MacPherson
Miss Abigail A. Eliot	Charles McKhann, M.D.
Mr. Gabriel Farrell	Miss Janet Merrill
John E. Fish, M.D.	Fredrika Moore, M.D.
David M. Hassman, M.D.	Mr. Carl Schraeder
William Healy, M.D.	Mr. Eugene Smith
Miss Katharine Hitchcock	Douglas A. Thom, M.D.
Percy R. Howe, D.D.S.	Mr. U. G. Wheeler
Mr. Cheney Jones	Charles F. Wilinsky, M.D.
Foster S. Kellogg, M.D.	Miss Mabel R. Wilson

Child Health B

For students who have completed Child Health A it will be possible by special arrangement with the head of the department to devote additional time to following the various phases of child health work for a longer period of time and at closer range than can be done during the general course. Students may be assigned to hospital and child welfare clinics where they will be given an opportunity to take responsibility and share in the conduct of the work.

Research in Child Hygiene

There will be an opportunity for qualified students to investigate any phase of child hygiene. The results of such special studies may be published by the student if approved by the head of the department.

MENTAL HYGIENE

C. MACFIE CAMPBELL, M.A., B.Sc., M.D., *Professor of Psychiatry.*

HENRY B. ELKIND, M.D., Dr.P.H., *Assistant in Mental Hygiene.*

With the coöperation and assistance of special lecturers, instructors, and assistants.

Mental Hygiene A

Three mornings a week (Tuesday, Thursday, and Saturday) for two months (March 28–May 27), 9–11 A.M.

This course, under the direction of Professor Campbell, offers the student opportunity for becoming familiar with the general field of mental hygiene and with its relations to other aspects of public health.

Mental Hygiene covers not only the traditionally recognized conditions of mental disorder ("Insanity") and defect ("Feeble-mindedness"): it deals also with manifold forms of apparent physical incapacity (including the "psychoneuroses"), with many social problems (prostitution, alcoholism, vagrancy), with maladjustments in home, in school, in industry.

The course will include a review of the fundamental principles of abnormal psychology, of the main types of mental abnormality, of the prevention, management and treatment of the personal and social factors involved in these disorders, and of the organization by the community of the necessary facilities for dealing with these problems.

The course will consist of lectures, clinical demonstrations, visits to hospitals, courts and other organizations, with supervised reading and opportunities for intensive clinical study along special lines (neurosyphilis, school hygiene, delinquency).

Elementary Mental Hygiene

Mondays 4 to 5 P.M., for ten weeks, beginning the middle of March.

This is a preliminary course on Medical Psychology given to the first-year medical students, consisting of lectures by Professor CAMPBELL.

Research in Mental Hygiene

Students holding the degree of Doctor of Medicine who satisfy the professor of their qualifications to do advanced work in Mental Hygiene may spend from one to six months under the guidance of Professor Campbell, working at the Boston Psychopathic Hospital.

PHYSIOLOGY

CECIL K. DRINKER, S.B., M.D., *Professor of Physiology.*

LAWRENCE T. FAIRHALL, Ph.D., *Assistant Professor of Physiology.*

LOUIS A. SHAW, A.B., *Instructor in Physiology.*

MADELEINE E. FIELD, A.B., A.M., *Instructor in Physiology.*

RANDALL CLIFFORD, A.B., M.D., *Research Fellow in Physiology.*

BENJAMIN H. ADAMS, A.B., M.D., *Research Fellow in Physiology.*

JOHN WILLIAM HEIM, M.S., *Research Fellow in Physiology.*

CHARLES W. SHILLING, B.S., M.D., *Research Fellow in Physiology.*

FLORANCE W. HAYNES, M.A., *Research Fellow in Physiology.*

Physiology A

Two afternoons a week (Tuesday and Thursday) for two months (February 27–April 27), 2–5 P.M.

The course is designed to indicate the relations of physiology, and to a certain extent biochemistry and pathology, to the problems of hygiene.

A review of the physiology of breathing will be followed by a discussion of the following: breathing in high and low concentrations of oxygen, carbon monoxide poisoning, absorption from the respiratory tract, and pathogenesis of the pneumokonioses. Demonstrations and laboratory exercises will include: the effect of breathing carbon dioxide, tests of vital capacity, carbon monoxide poisoning, quantitation of carbon monoxide in the air, decompression after work in high pressures, and modern methods of resuscitation.

A discussion of the physiology of the circulation and the relation of the circulation to respiration and metabolism will lead to an examination of tests for circulatory fitness and the adjustments of the circulation to changes in temperature and work. Demonstrations and laboratory exercises will include: metabolism at rest, at work, and under the influence of high temperature. Tests for circulatory efficiency will be demonstrated and discussed. Lectures on the formation and destruction of the blood cells will conclude this section of the course. Students will make blood examinations in benzol and lead poisoning.

The organization and physiology of the neuromuscular apparatus will introduce the general subject of working efficiency and fatigue. Demonstrations and laboratory exercises will include: measurement of oxygen debt, the "steady state" in work, and methods of testing fundamental neuromuscular ability.

Research in Physiology

Properly qualified students will be given opportunities to work in the laboratory provided they can spend at least six months of undivided time.

Nutrition A

LAWRENCE T. FAIRHALL, B.S., A.M., Ph.D., *Assistant Professor of Physiology.*

Lectures: *three afternoons a week (Monday, Wednesday, and Friday) for two months (February 27–April 28) 2–3 P.M.* Laboratory: *three afternoons a week (Monday, Wednesday, and Friday) for two months (February 27–April 28) 3–5 P.M.*

This is an advanced course which will include lectures, conferences, and assigned reading upon the chemistry and physiology of nutrition, particularly from the point of view of large groups of people. It will include the more vital and practical aspects of metabolism and diet. Especial attention will be directed to modern problems in the economics of food production, distribution, utilization and food control.

During the course visits will be made to various plants producing and handling articles of food.

An opportunity for laboratory work will be given to properly qualified students. It will consist of a study of the more important practical methods of metabolism; the determination of the caloric value of food-stuffs; the determination of the protein fat and carbohydrate values of foods; the importance of the ash constituents from the viewpoint of mineral metabolism and the micro-analytical rating of foods with respect to spoilage, contamination, and adulteration.

Microchemical Analysis

Hours to be arranged according to individual needs.

An elective course, offered only to students properly qualified in chemistry, in micromethods of analysis of arsenic, mercury, lead and other poisonous metals, dusts, fumes and gases of importance in industrial hygiene.

PUBLIC HEALTH ENGINEERING

Industrial Hygiene and Sanitary Engineering

PHILIP DRINKER, S.B., Ch.E., *Associate Professor of Industrial Hygiene.*

GORDON M. FAIR, S.B., *Associate Professor of Sanitary Engineering.*

MELVILLE C. WHIPPLE, *Assistant Professor of Sanitary Chemistry.*

CONSTANTIN P. YAGLOU, A.B., M.E., M.M.E., *Assistant Professor of Industrial Hygiene.*

THEODORE HATCH, M.S., *Instructor in Sanitary Engineering.*

WILLIAM G. HAZARD, A.B., *Instructor in Industrial Hygiene.*

WILLIAM F. WELLS, S.B., *Instructor in Sanitary Science.*

ROBERT M. THOMSON, *Assistant in Industrial Hygiene.*

HENRY WARREN, *Assistant in Industrial Hygiene.*

Hygiene of Ventilation and Illumination A

Two mornings a week (Tuesday and Thursday) for three months (January 31–April 27), 9–11 A.M. Assoc. Prof. DRINKER, Asst. Prof. YAGLOU, Messrs. HATCH, HAZARD, and WARREN.

Lectures and demonstrations on the hygienic, rather than the engineering, aspects of ventilation and illumination. The course is given in close coöperation with the Department of Physiology of the School of Public Health.

The lectures and demonstrations cover the following general topics:

Physical properties of the air and their physiologic influence upon the human body: The influence of temperature, humidity, air motion, and atmospheric electricity upon health, comfort, metabolism, industrial output and efficiency.

Atmospheric Impurities: The physiological significance of particulate impurities — dusts, fumes, and smokes — their determination, their physical, physiological, and chemical nature, and their permissible concentrations in the air of work places. The physiological significance of gaseous impurities and the amounts permissible in air.

Barometric Pressure: The significance of abnormally high or low barometric pressures and their effect upon health and performance of work.

Illumination: Studies of glare, diffusion, speed of vision, visual acuity, and their importance in various occupations. Industrial and domestic illumination, determination of optimum illumination intensities as related to eye fatigue, output, and accidents.

Several of the lectures and demonstrations will be given by the Department of Physiology and will include such subjects as respiration, circulation, carbon monoxide poisoning, and resuscitation.

Sanitary Air Analysis

Three hours (9–12), three mornings a week (days to be arranged) for four months (February to May inclusive). Mr. HATCH, Assoc. Prof. DRINKER and Asst. Prof. YAGLOU.

Measurement and interpretation of adverse conditions found in work places of all types, such as factories and mills, and in assembly halls. Methods employed in determining (a) physical properties of the air, such as temperature, humidity, and air motion; (b) atmospheric impurities — gases and dusts, and normal constituents of the air; (c) efficiencies of protective devices — masks, respirators, mechanical dust collecting apparatus, hoods and exhausters; (d) efficiencies of air-conditioning equipment; (e) corrective measures for unfavorable conditions.

Ventilation Engineering and Air Conditioning

Two one and one half hour sessions a week (time to be arranged with Engineering School) throughout first semester. Asst. Prof. YAGLOU, Assoc. Prof. DRINKER and Mr. HATCH. For engineers and architects.

Principles of heating, ventilation, air conditioning and refrigeration, and design of equipment for industrial and public buildings.

Research in Ventilation and Illumination

A limited number of qualified students will be given an opportunity to do research work on any of the subjects covered in the three courses offered by this Department.

At present four research problems are under study: (1) the control of dust generated in industrial processes, (2) dust inhalation, retention, distribution, and protective measures, (3) atmospheric conditions — temperature, humidity, air motion, and ionization — their measurement, control, and effect on man and animals, (4) air requirements for ventilation.

The Principles of Sanitary Engineering A

Three mornings a week (Monday, Wednesday, and Friday) for four months (January 30–May 26), 9–12 A.M. at Pierce Hall, Cambridge.

Assoc. Professors FAIR and DRINKER, Asst. Professors WHIPPLE and YAGLOU, and Messrs. WELLS and HATCH.

A course of lectures, demonstrations, laboratory work and inspections arranged especially for students in the School of Public Health. The following topics will be studied: (a) Water Supply — collection, purification and distribution; (b) Sewerage — collection, treatment and disposal; (c) Analysis of Water and Sewage — physical, chemical and biological; (d) Ventilation — physical properties of clean and impure air and their physiological effects; (e) Illumination; (f) Housing, City Planning and Zoning; (g) Rural Sanitation; (h) Biological Control —

insects and rodents; (i) Food Sanitation — production, preservation, distribution and preparation; (j) Milk Sanitation; (k) Shellfish Sanitation; (l) Garbage and Refuse — collection and disposal; (m) Sanitation of Schools, Camps and Bathing Places.

Sanitary Chemistry and Biology B

Three hours (2-5), three afternoons a week (Monday, Wednesday, and Friday) for four months (October, November, December, and January).

Asst. Professor WHIPPLE.

Laboratory methods employed in the study of sanitary projects; microscopy of water and sewage; physical, chemical, and bacteriological methods of sanitary analysis; field work in limnology, stream pollution and plant operation.

Research in Sanitary Engineering

There is opportunity for properly qualified students to pursue advanced work in subjects relating to the field of sanitary engineering. During the past year departmental research was carried on in the following subjects: sludge digestion; biochemical oxygen demand; hydraulics of water filtration; efficiency of filter cleaning; bacteriology of shellfish.

INDUSTRIAL MEDICINE

W. IRVING CLARK, A.B., M.D., *Assistant Professor of the Practice of Industrial Medicine.*

ALICE HAMILTON, M.D., A.M., *Assistant Professor of Industrial Medicine.*

ROBERT S. QUINBY, M.D., *Instructor in the Practice of Industrial Medicine.*

LOUIS R. DANIELS, M.D., *Instructor in the Practice of Industrial Medicine.*

FRANK E. SCHUBMEHL, M.D., *Assistant in Industrial Medicine.*

HAROLD W. STEVENS, A.B., M.D., *Assistant in Industrial Medicine.*

NOEL G. MUNROE, A.B., M.D., *Assistant in Industrial Medicine.*

HALSTEAD G. MURRAY, M.D., *Assistant in Industrial Medicine.*

CHARLES F. HORAN, *Assistant in Industrial Medicine.*

MAY R. MAYERS, A.M., M.D., *Assistant in Industrial Medicine.*

Industrial Medicine A

W. IRVING CLARK, A.B., M.D., *Assistant Professor of the Practice of Industrial Medicine.*

Two mornings a week (Tuesday and Saturday), for one month (September 27–October 25), 10.15–11.15 A.M.

This course is arranged to meet the requirements of students who desire a survey of industrial medicine and methods of industrial practice. It will include lectures on the relation of Industrial Medicine to Public Health, the medical aspects of personnel work in Industry, and the technique of establishing and maintaining a medical department in a factory. A number of the more important clinical phases of industrial medicine, and the relation of the medical department with other departments in a factory, will be discussed.

Legal Aspects of Industrial Medicine A

Three afternoons a week (Monday, Wednesday and Friday) for one month (October 24–November 18), 2–3 P.M.

A series of discussions covering the social-economic phases of industrial hygiene, the application of Employer's Liability and Workmen's Compensation laws to the prevention of industrial accidents and occupational diseases, and a study of methods employed by the State and the employers in prevention programs. Opportunities are offered for plant visits and investigations into the modern tendencies in the field of social insurance.

Industrial Toxicology A

ALICE HAMILTON, M.D., A.M., *Assistant Professor of Industrial Medicine.*

Two mornings a week (Tuesday and Saturday) for three months (October 25–January 28), 10.15–11.15 A.M.

This is an advanced course which will include lectures, conferences, and assigned reading upon the industrial poisons, together with visits to factories and definite studies of field conditions.

VITAL STATISTICS

EDWIN B. WILSON, Ph.D., *Professor of Vital Statistics.*

CARL R. DOERING, M.D., D.Sc., *Assistant Professor of Vital Statistics.*

Vital Statistics A

A1. *Two mornings a week (Tuesday and Saturday) for four months (September 27-January 28), 9-10 A.M.*

A2. *Three mornings a week (Tuesday, Thursday, and Saturday) for four months (January 31-May 27), 11.15 A.M.-12.45 P.M.*

The elementary course in Vital Statistics will consist of lectures, recitations, and written work designed to familiarize the student (1) with the general facts already well established in demography, (2) with the methods of graphical representation, (3) with methods of calculation and use of averages, (4) with types of rates and their adjustment, (5) with the basic theory of probability including errors of sampling, (6) with association (Yule) and correlation, (7) with arithmetic and geometric trends, and (8) as time permits with such supplementary special topics, population-theory (Pearl or Knibbs), epidemiological theory (Ross or Brownlee), frequency functions, or analysis of morbidity, as may be of especial interest from year to year. So far as is practical students will be encouraged to select a problem of especial interest to them to carry through the course and work up in accordance with the various statistical methods developed.

The course is divided into two parts either of which may, with the consent of the instructor, be taken separately:

A1, descriptive statistics, covering (1), (2), (3), and (4)

A2, inductive statistics, covering (5), (6), (7), and (8).

The first part deals with the collection, arrangement and analysis of statistical data to represent or describe a given situation; the second part discusses the bases of comparability of similar statistical situations and the conditions governing the layout of a survey or investigation so that the data obtained may be of value for inferential purposes.

Text: G. C. WHIPPLE, *Vital Statistics.*

M. J. ROSENAU, *Preventive Medicine*, Chap. XXX, by
C. R. DOERING.

References: ARNE FISHER, *Mathematical Theory of Probabilities.*

G. U. YULE, *Introduction to the Theory of Statistics.*

Vital Statistics B

Students who have a satisfactory elementary knowledge of statistics will be directed in their reading of more advanced portions of Vital

Statistics, including the theory of frequency curves or other matters listed under (8) in Course A. A knowledge of the elements of the infinitesimal calculus though not a prerequisite is desirable, and for certain topics is indispensable. Students who plan to take Vital Statistics B should consult the instructor early to ascertain whether those topics which they desire especially to study require any additional training in mathematics (Biomathematics A or a course in some other school).

Biomathematics A

Two afternoons a week (Tuesday and Thursday) for two months (October and November), 3-4 P.M. Will be given for six or more students.

Lectures on certain aspects of mathematics in their relation to the biological sciences. Arithmetic and algebra, symbolism, permanence of form, exponents, permutations and combinations, binomial theorem, constants and variables, uniform rates, uniformly varying rates (accelerations), integrated rates, areas, limits of quotients and sums, infinitesimals, functions, differentials, derivatives, integrals, law of organic growth (Malthus), logarithms, exponentials, inverse functions, mathematical tables, interpolation, summation, law of unimolecular reaction, law of autocatalytic or buffer action, environmental inhibition of growth, treatment of experimental data, empirical equations and the determination of natural laws, probability, curve-fitting, the statistical or kinetic view of equilibrium in nature.

Research in Vital Statistics

Opportunities for special research work in Vital Statistics are open to students, whether specializing in Vital Statistics or primarily in some other field of work, who desire to make a statistical investigation of their own connected with public health, or who may desire to coöperate in the general program of statistical research of the department.

Investigations are in progress or planned: with respect to hospital statistics of particular diseases using the large amount of material available in the hospitals associated with the School; with respect to the incidence of diseases in coöperation with industries which may desire such investigations as a rational basis of the health programs for their employees; with respect to the inter-relations of Vital Statistics and economic or social phenomena; and with respect to those problems of statistics which may be of special and immediate consequence to the State Department of Health.

Research in Biomathematics

Opportunities are offered to students who desire to pursue the quantitative and theoretical sides of various biological problems of a non-statistical nature or of a nature statistical in another sense than generally implied in the technical term Vital Statistics.

The Statistical Laboratory

The laboratory for instruction and research in Vital Statistics is housed on the second floor of the building of the School of Public Health on Van Dyke Street, and is equipped with various graphical and mechanical aids including sorting, tabulating and calculating machinery.

COURSES IN OTHER DIVISIONS OF THE UNIVERSITY

Students in the School of Public Health may take courses in other departments of the University subject to the following conditions: (1) Students must be properly qualified; (2) the consent of the professor in charge of the course must be obtained in each case; (3) the approval of the Administrative Board of the School of Public Health must be procured before one of these courses may be included as a part of a program.

MEDICAL SCHOOL

The Medical School is very closely affiliated with the School of Public Health and the courses offered are open to students in this School. Of special interest to students in public health is the very unusual group of courses offered by the Medical School on Tuesday and Thursday afternoons, covering a wide range of subjects. A special bulletin is issued describing these courses. The research facilities of some departments of the Harvard Medical School present valuable opportunities for students in public health.

COURSES FOR GRADUATES

Graduate courses in the Medical School, most of which last one month, are offered from October to June to graduates of Class A medical schools. Another group of short courses is given from June 1st to September 30th. These courses are open also to properly qualified undergraduate students and women.

DENTAL SCHOOL

The Dental School is affiliated with the School of Public Health, and is situated nearby, so that students in this School who are interested in any aspect of dental work may take advantage of the courses offered in that School.

GRADUATE SCHOOL OF EDUCATION

Public health students who are planning to teach public health, or who wish to make a study of the educational side of public health, may take courses in the Graduate School of Education, which offers such courses as The Principles of Educational Psychology and Mental Hygiene, School Hygiene, The Clinical Testing of Children, Problems in Mental and Physical Development, etc.

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

Students specializing in Industrial Hygiene or Public Health Administration may take special courses in the Graduate School of Business Administration, such as Industrial Management, Business Statistics, etc.

COURSES IN MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The School of Public Health maintains close coöperation with the Massachusetts Institute of Technology. A group of courses given at the Massachusetts Institute of Technology, but not listed in this catalogue, is open to the students in the School of Public Health, and may, with the approval of the Administrative Board, be included in a general program and counted toward a degree.

STUDENTS 1931-32

- Adams, Benjamin H., M.D. (*Univ. of Iowa*) 1918, Newton, Mass.
Akatsuka, Keiji, M.D. (*Tokyo Imperial Univ.*) 1925, Kagoshima, Japan
Angus, Thomas C., London, Eng.
Bradish, Jay D., M.D. (*Ohio State Univ.*) 1924, Hartford, Conn.
Cameron, James M., M.D. (*Univ. of Toronto*) 1928, Toronto, Can.
Carr, David D., M.D. (*Vanderbilt Univ.*) 1928, LaFayette, Ala.
Carroll, Francis B., D.M.D. (*Tufts Dental School*) 1924, Whitinsville, Mass.
Diefendorf, Burke, M.D. (*Albany Medical School*) 1913, Copake, N. Y.
Dudley, Oscar A., Shrewsbury, Mass.
Feemster, Olive S., M.D. (*Tulane Medical School*) 1931, Baltimore, Md.
Foster, Theodore F., M.D. (*Univ. of Cincinnati*) 1921, Knoxville, Tenn.
Galloway, Dolph V., M.D. (*Univ. of Tennessee*) 1925, Clarkdale, Miss.
Goodnow, Daniel H., Certificate (*Massachusetts Inst. of Technology*) 1931, West Medford, Mass.
Ishikawa, Tomoyoshi, M.D. (*Tokyo Imperial Univ.*) 1926, Kurashiki-Shi, Japan
Jensen, Martin H., M.D. (*Univ. of Texas*) 1925, San Antonio, Tex.
Johnson, Daniel P., S.B. (*Massachusetts Inst. of Technology*) 1931, Cambridge, Mass.
Kiang, David H., M.D. (*Hunan-Yale Medical Coll.*) 1926, Nanking, China
Kise, Yoshiaki, M.D. (*Medical School of Keio Univ.*) 1925, Tokyo, Japan
Lawson, George McL., M.D. (*Yale Univ.*) 1924, Louisville, Ky.
Miller, William E., M.D. (*Univ. of Illinois*) 1931, Chicago, Ill.
Nozu, Yuzuru, M.D. (*Tokyo Imperial Univ.*) 1927, Tokyo, Japan
Polak, Isaac B., M.D. (*Tufts Coll.*) 1918, Newton, Mass.
Pool, Charles Lundy, S.B. (*Massachusetts Inst. of Technology*) 1923, Providence, R. I.
Runcie, William H., M.D. (*New York Univ. and Bellevue Medical Coll.*) 1910, Freeport, L. I.
Wang, Shih Wei, M.D. (*Peiping Union Medical Coll.*) 1928, Kiangsu, China

DEGREES

On June 18, 1931, Degrees and Certificates were conferred as follows:

DOCTOR OF PUBLIC HEALTH (*cum laude*)

Prodan, Leon, M.D. (*Faculty of Medicine, Univ. of Cluj*)
 1927, M.P.H. (*cum laude*) (*Harvard Univ.*) 1930, Cluj, Roumania
Special Field, Physiology.
Thesis, "Cadmium Poisoning."

MASTER OF PUBLIC HEALTH (*cum laude*)

Murphy, William J., M.D. (*Northwestern Univ.*) 1926, Lansing, Mich.
 Subramaniam, Ramaswami, M.D. (*Madras Medical Coll.*) 1920,
 Madras, India

MASTER OF PUBLIC HEALTH

Chang, Wei, M.D. (*Hunan-Yale Medical Coll.*) 1924, Peiping, China
 Ch'en, Chih-Ch'ien, M.D. (*Peiping Union Medical Coll.*)
 1928, Nanking, China
 Evans, Kenneth L., L.R.C.P., L.R.C.S. (*Kings Coll. Hospi-
 tal*) 1929, Kingston, Jamaica
 Fang, I-chi, M.D. (*Peiping Union Medical Coll.*) 1927, Peiping, China
 Grover, Morris L., M.D. (*Tufts Medical School*) 1928, Dorchester, Mass.
 Khaum, Alfred, M.D. (*Univ. of Vienna*) 1917, Vienna, Austria
 Lane, Edward A., M.D. (*Cornell Univ.*) 1916, White Plains, N. Y.
 Milne, John A., M.D. (*Dalhousie Univ.*) 1924, Hazlehurst, Miss.
 Rasmeritza, Eugen, M.D. (*Faculties of Medicine, Univs. of
 Bucharest and Cluj*) 1924, Bucharest, Roumania
 Smith, Harry B., M.D. (*Univ. of Pennsylvania*) 1926, Fremont, N. C.
 West, John B., M.D. (*Howard Univ.*) 1929, Washington, D. C.

CERTIFICATE IN PUBLIC HEALTH

Lherisson, Camille, M.D. (*National School of Medicine
 and Pharmacy*), 1929, Port au Prince, Haiti
 Ramirez-Santos, Rafael, M.D. (*Tulane Univ.*) 1927, Caguas, Porto Rico
 Swoboda, Frank, M.D. (*Univ. of Prague*) 1925, Prague, Czechoslovakia
 Vidoli, Marino, M.D. (*Univ. of Rome*) 1924, Trieste, Italy

TABULAR VIEW

	OCTOBER	NOVEMBER	DECEMBER	JANUARY
A.M. Monday Wednesday Friday	Child Hygiene A 9-10 Public Health Administration A 10.15-11.15 Epidemiology A 11.30-12.30 (Mon. and Wed. only)	Child Hygiene A 9-10 Public Health Administration A 10.15-11.15 Epidemiology A 11.30-12.30. (Mon. and Wed. only)	Child Hygiene A 9-10 Public Health Administration A 10.15-11.15 Epidemiology A 11.30-12.30 (Mon. and Wed. only)	Child Hygiene A 9-10 Public Health Administration A 10.15-11.15 Epidemiology A 11.30-12.30 (Mon. and Wed. only)
A.M. Tuesday Saturday	Vital Statistics A1 9-10 Industrial Medicine A 10.15-11.15 Epidemiology A 11.30-12.30 (Tuesday only)	Vital Statistics A1 9-10 Industrial Toxicology A 10.15-11.15 Epidemiology A 11.30-12.30 (Tuesday only)	Vital Statistics A1 9-10 Industrial Toxicology A 10.15-11.15 Epidemiology A 11.30-12.30 (Tuesday only)	Vital Statistics A1 9-10 Industrial Toxicology A 10.15-11.15 Epidemiology A 11.30-12.30 (Tuesday only)
Thursday	Field Work in Public Health Administration, Epidemiology, and Child Hygiene (All day)	Field Work in Public Health Administration, Epidemiology, and Child Hygiene (Mornings only)	Field Work in Public Health Administration, Epidemiology, and Child Hygiene (Mornings only)	Field Work in Public Health Administration, Epidemiology and Child Hygiene (All day)
P.M. Monday Wednesday Friday	Bacteriology A 2-5	Bacteriology A 2-5 Legal Aspects of Industrial Medicine A 2-3	Bacteriology A 2-5	Bacteriology A 2-5
	FEBRUARY	MARCH	APRIL	MAY
A.M. Monday Wednesday Friday	Sanitary Engineering A 9-12	Sanitary Engineering A 9-12	Sanitary Engineering A 9-12	Sanitary Engineering A 9-12
A.M. Tuesday Thursday Saturday	Hygiene of Ventilation and Illumination A 9-11 (Tues. and Thurs. only) Communicable Diseases A 10-11 (Tues. and Sat. only) Vital Statistics A2 11.15-12.45	Hygiene of Ventilation and Illumination A 9-11 (Tues. and Thurs. only) Communicable Diseases B 9-11 Vital Statistics A2 11.15-12.45	Hygiene of Ventilation and Illumination A 9-11 (Tues. and Thurs. only) Mental Hygiene A 9-11 Communicable Diseases B 9-11 Vital Statistics A2 11.15-12.45	Mental Hygiene A 9-11 Vital Statistics A2 11.15-12.45
P.M. Monday Wednesday Friday	Medical Zoölogy and Tropical Medicine A 2-5	Medical Zoölogy and Tropical Medicine A 2-5 Nutrition A—Lecture 2-3 Nutrition A—Laboratory 3-5	Medical Zoölogy and Tropical Medicine A 2-5 Nutrition A — Lecture 2-3 Nutrition A — Laboratory 3-5	Medical Zoölogy and Tropical Medicine A 2-5
P.M. Tuesday Thursday		Physiology A 2-5	Physiology A 2-5 Applied Immunology A 2-5	

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The Annual University Catalogue.

The Annual Catalogues of the College and the several Professional Schools of the University; the Descriptive Pamphlet; the Announcements of the several Departments; etc., etc.

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